Service Schematics



RM-67



Introduction

Important:

This document is intended for use by authorized service centers only.

“Service Schematics“ was created with focus on customer care.
The purpose of this document is to provide further technical repair information for NOKIA mobile phones on Level 3/4 service activities.
It contains additional information such as e.g. “Component finder”, “Frequency band table” or “Antenna switch table”.
The “Signal overview” page gives a good and fast overview about the most important signals and voltages on board.
Saving process time and improving the repair quality is the aim of this document.
It is to be used additionaly to the service manual and other training or service information such as Service Bulletins.

All measurements were made using following equipment:

Nokia repair SW	:	Phoenix version 2006.44.7.123
Oscilloscope	:	Fluke PM 3380A/B
Spectrum Analyzer	:	Advanced R3162 with an analog probe
RF-Generator/GSM Tester	:	Rhode & Schwarz CMU 200
Multimeter	:	Fluke 73 Series II

While every endeavour has been made to ensure the accuracy of this document, some errors may exist. If the reader finds any errors, NOKIA should be notified in writing.

Please send E-Mail to: **training.sace@nokia.com**

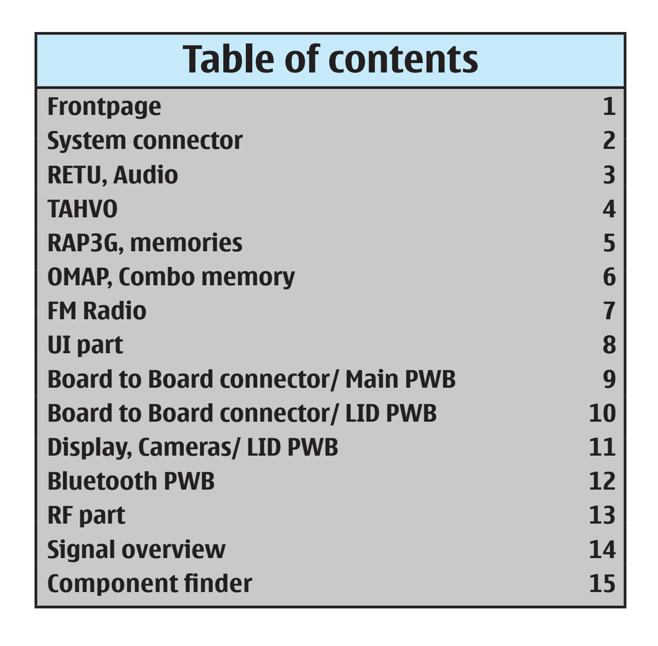
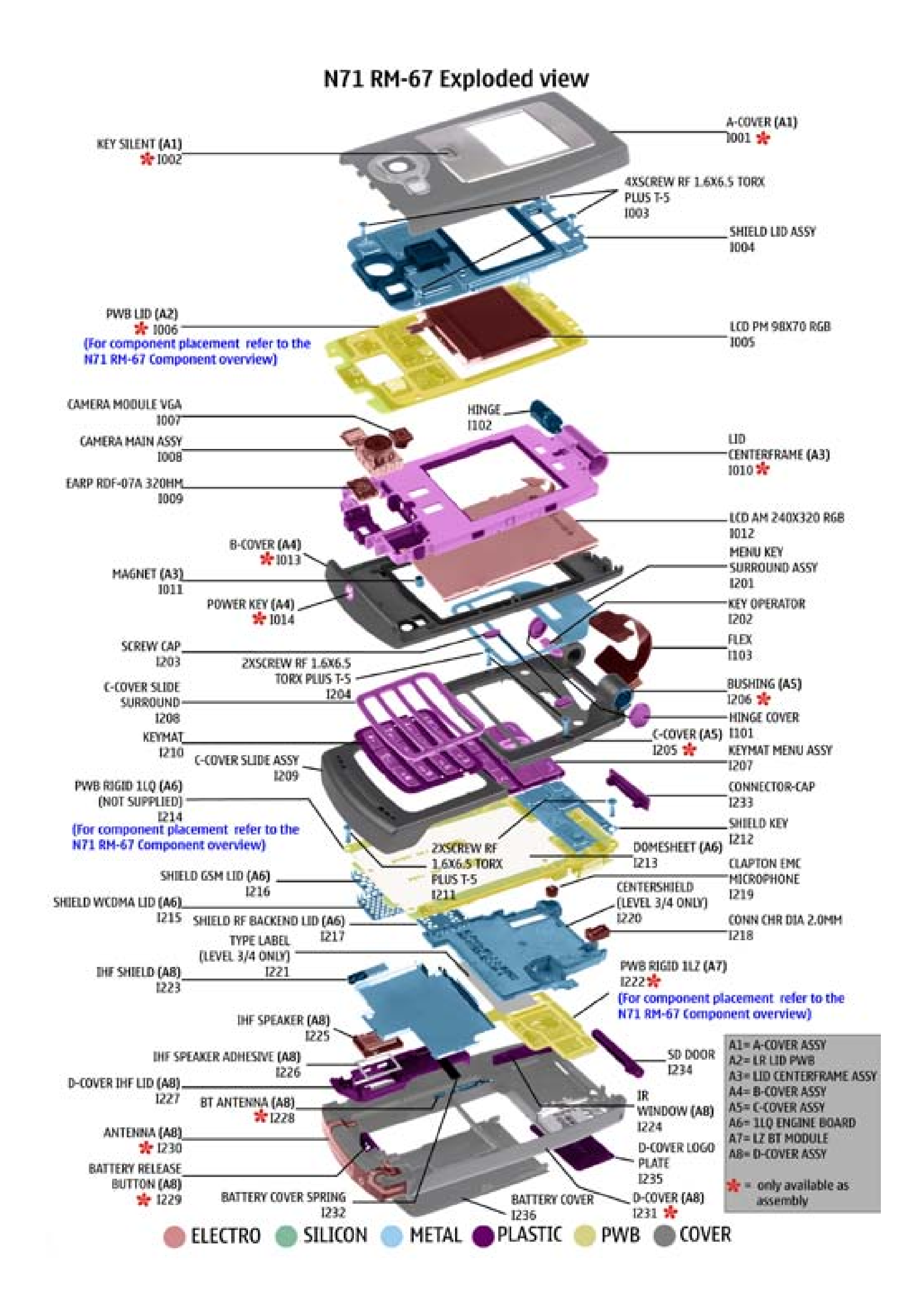
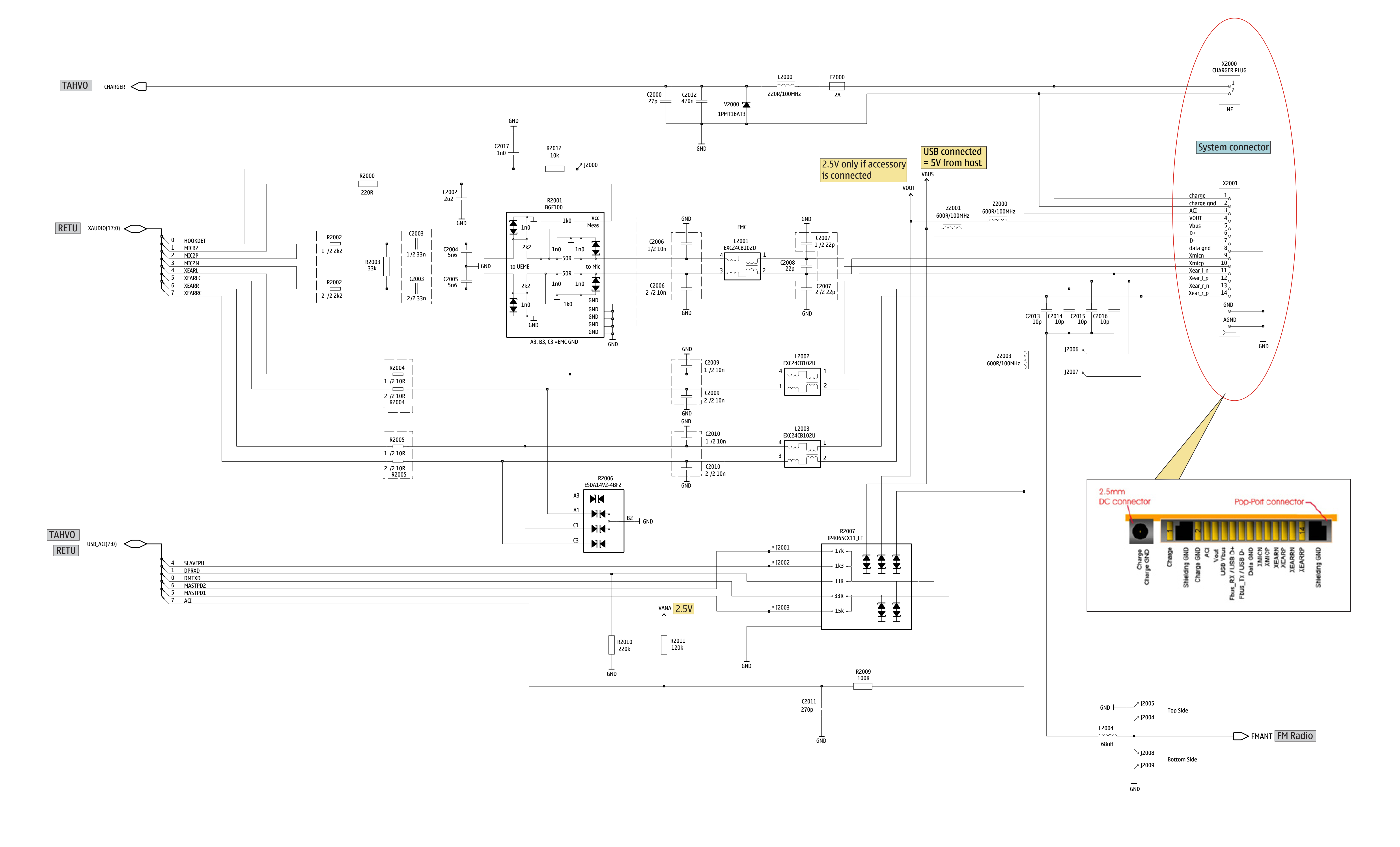
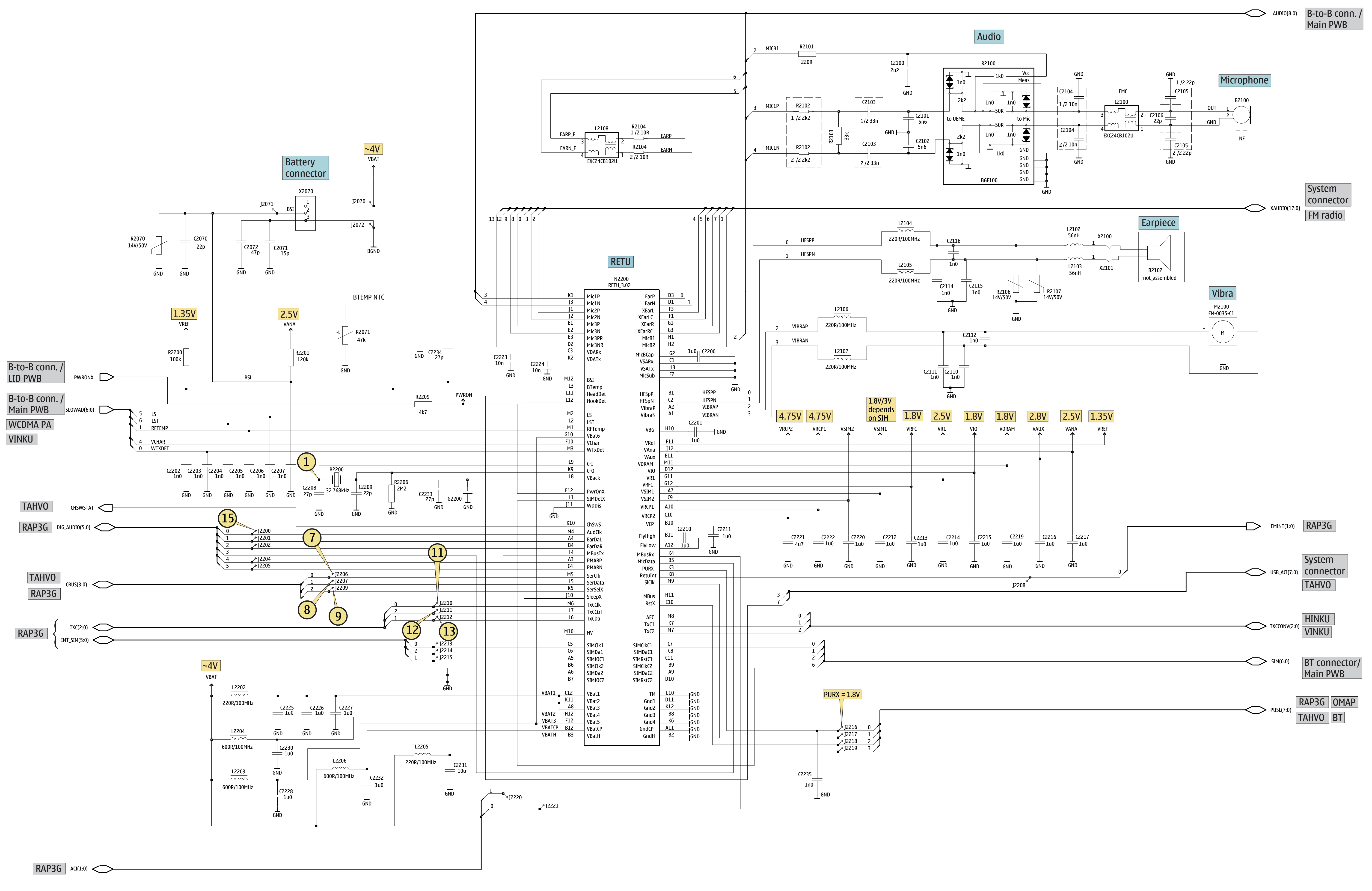


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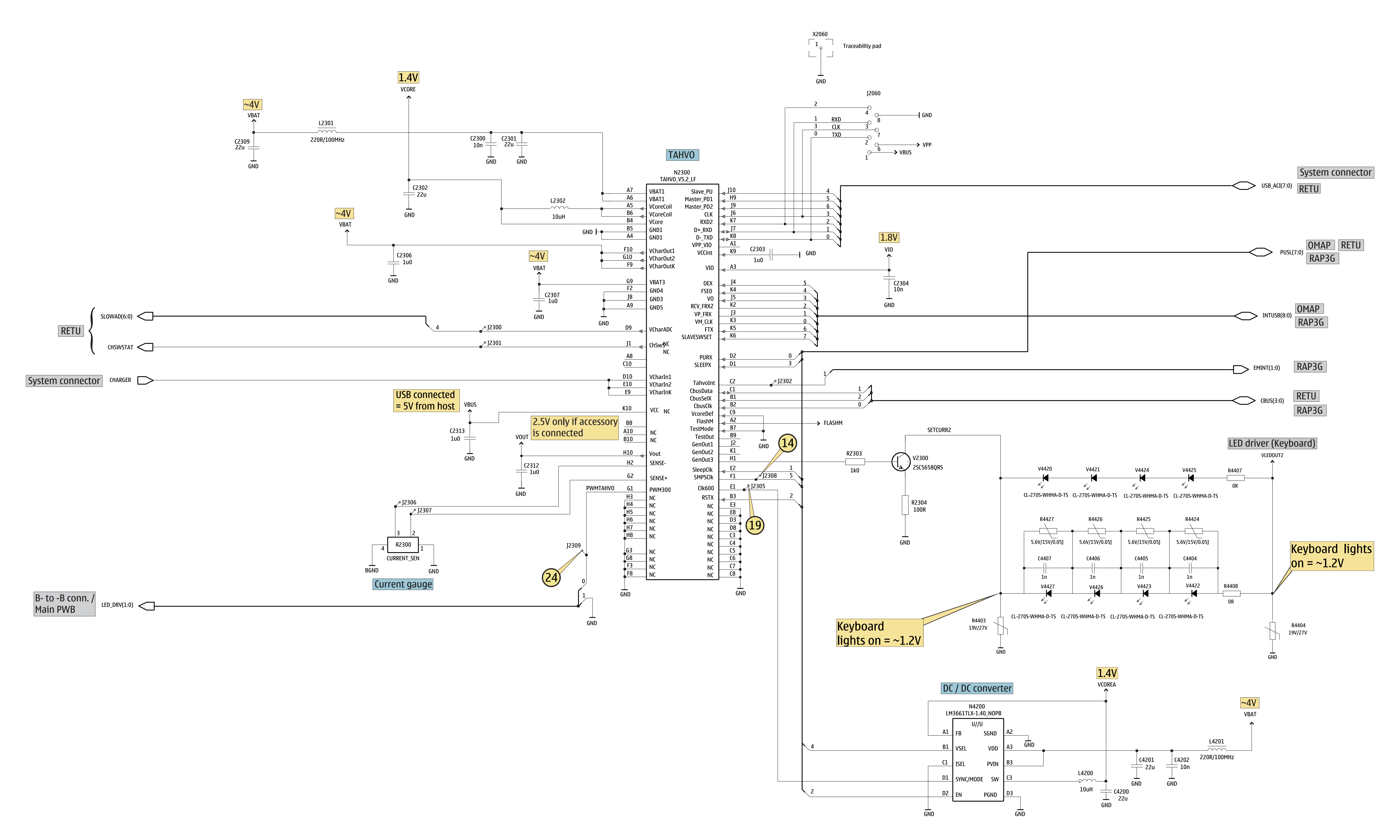
Exploded view and compnent disposal

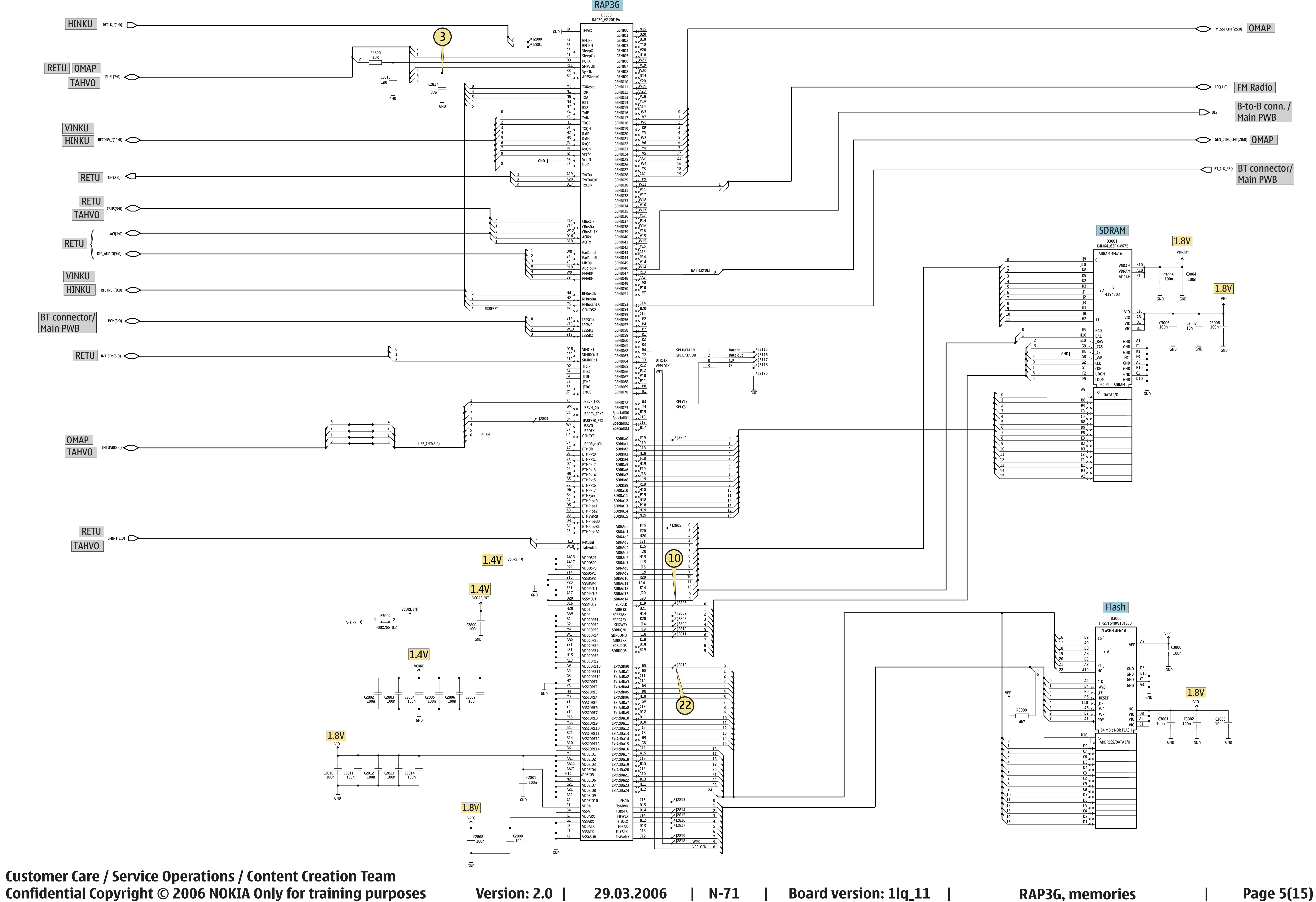


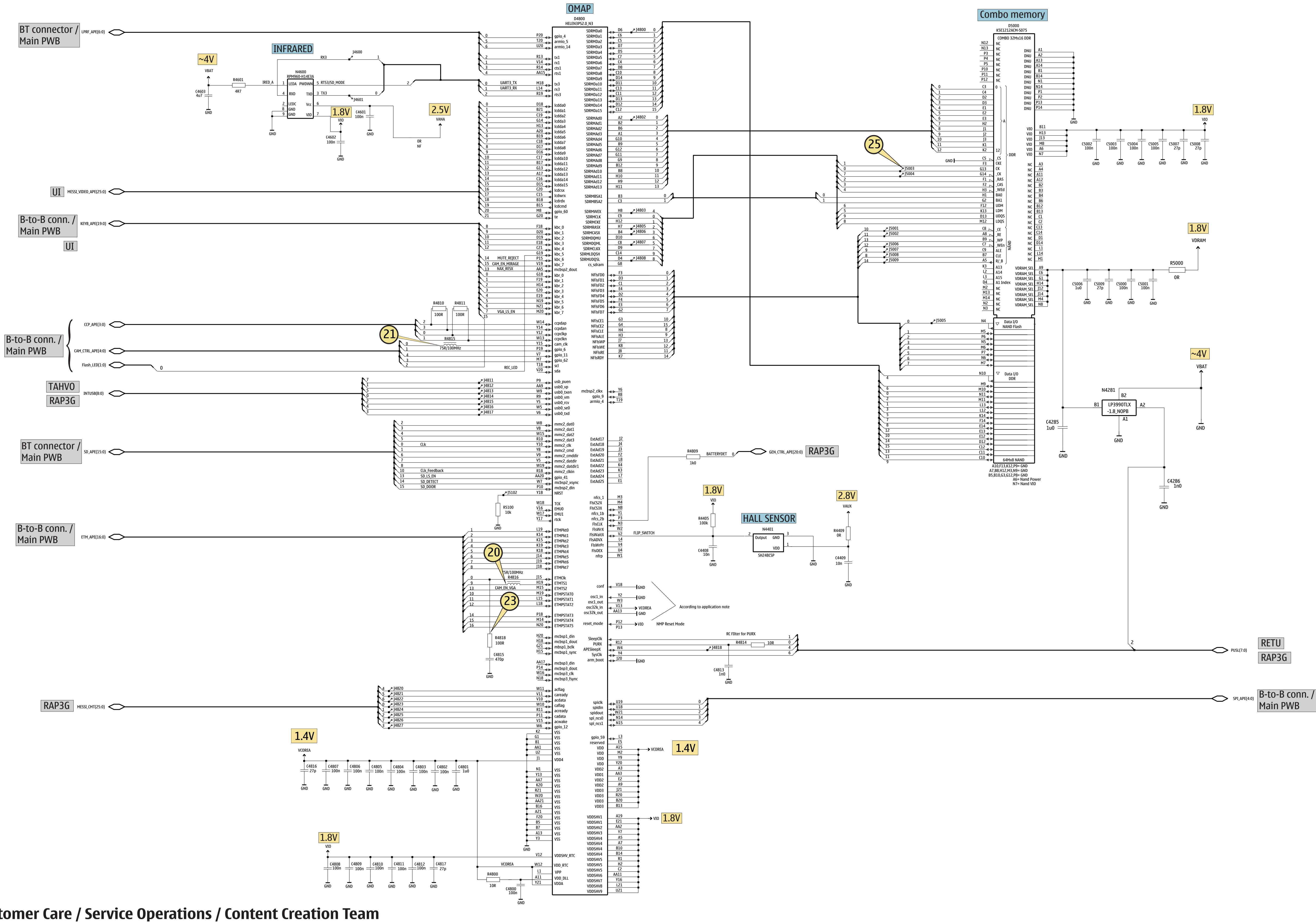

TAHVO
CHARGER
X2000
CHARGER PLUG
NF
L2000
220R/100MHz
F2000
2A
C2000
27p
C2012
470n
V2000
1PMT16AT3
GND
C2017
1n0
R2012
10k
J2000
System connector
USB connected
= 5V from host
2.5V only if accessory
is connected
VBUS
VOUT
R2000
220R
C2002
2u2
R2001
BGF100
X2001
charge
charge gnd
ACI
VOUT
Vbus
D+
D-
data gnd
Xmicn
Xmicp
Xear_l_n
Xear_l_p
Xear_r_n
Xear_r_p
AGND
RETU
XAUDIO(17:0)
HOOKDET
MICB2
MIC2P
MIC2N
XEARL
XEARLC
XEARR
XEARRC
R2002
R2003
33k
C2003
C2004
5n6
C2005
5n6
to UEME
to Mic
Vcc
Meas
A3, B3, C3 =EMC GND
C2006
EMC
L2001
EXC24CB102U
C2008
22p
C2007
Z2001
600R/100MHz
Z2000
600R/100MHz
C2013
10p
C2014
10p
C2015
10p
C2016
10p
J2006
J2007
Z2003
600R/100MHz
R2004
C2009
L2002
EXC24CB102U
R2005
C2010
L2003
EXC24CB102U
R2006
ESDA14V2-4BF2
2.5mm
DC connector
Pop-Port connector
Charge
Charge GND
Charge
Shielding GND
Charge GND
ACI
Vout
USB Vbus
Fbus_RX / USB D+
Fbus_Tx / USB D-
Data GND
XMICN
XMICP
XEARN
XEARP
XEARRN
XEARRP
Shielding GND
TAHVO
RETU
USB_ACI(7:0)
SLAVEPU
DPRXD
DMTXD
MASTPD2
MASTPD1
ACI
J2001
J2002
J2003
R2007
IP4065CX11_LF
17k
1k3
33R
33R
15k
VANA
2.5V
R2010
220k
R2011
120k
R2009
100R
C2011
270p
J2005
J2004
Top Side
L2004
68nH
FMANT
FM Radio
J2008
J2009
Bottom Side

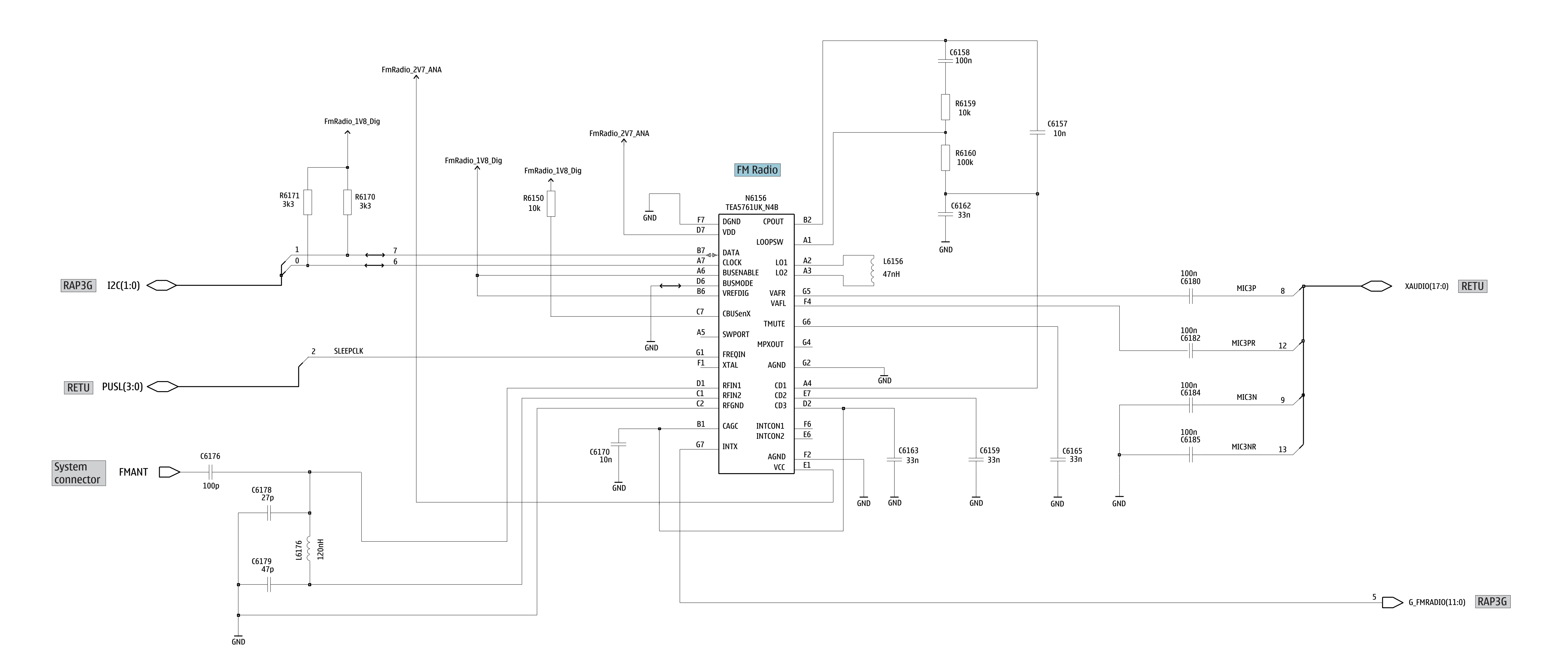


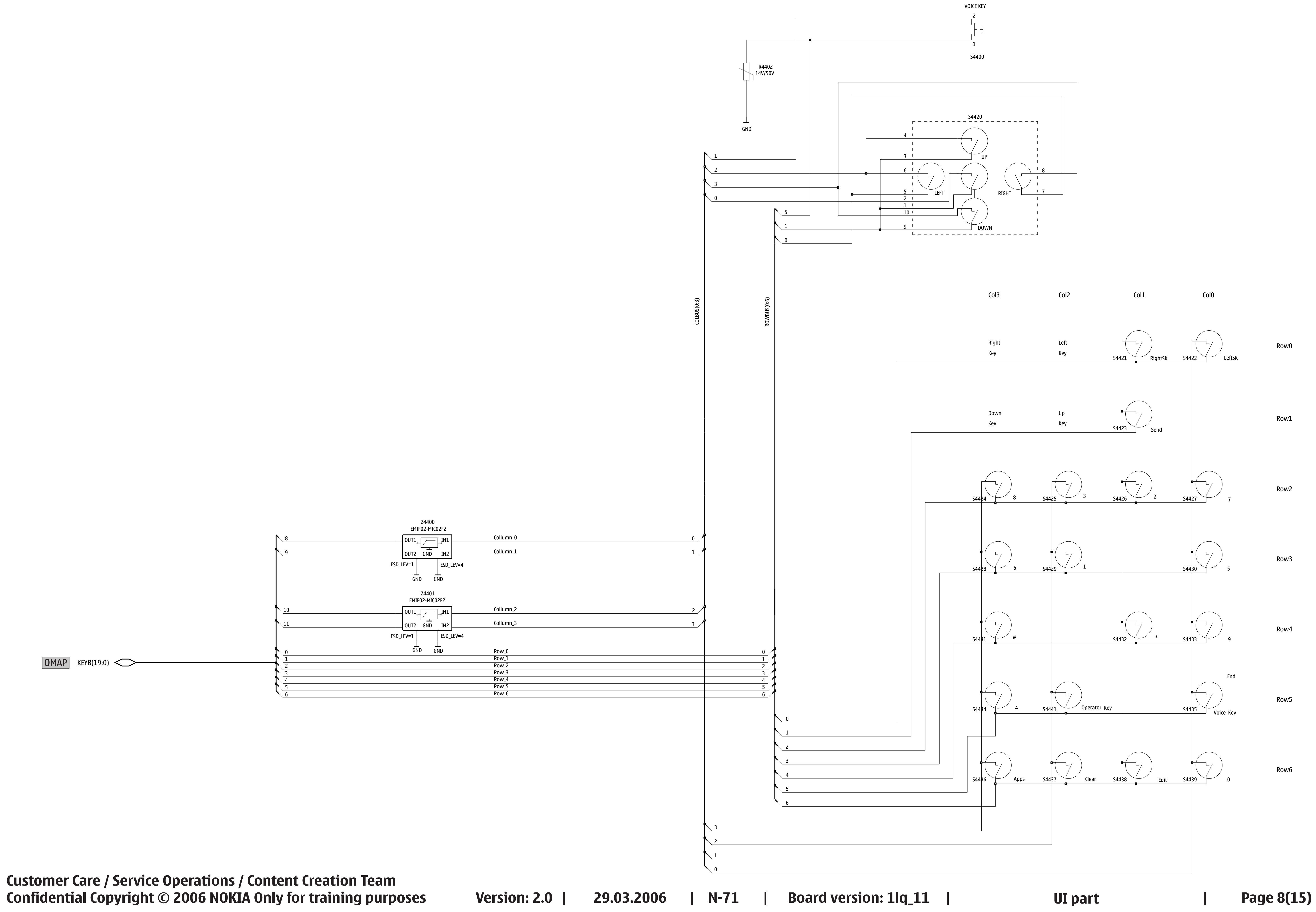
B-to-B conn. / Main PWB
Audio
Microphone
Battery connector
~4V
System connector
FM radio
Earpiece
RETU
Vibra
1.35V
2.5V
BTEMP NTC
B-to-B conn. / LID PWB
B-to-B conn. / Main PWB
WCDMA PA
VINKU
4.75V
4.75V
1.8V/3V depends on SIM
1.8V
2.5V
1.8V
1.8V
2.8V
2.5V
1.35V
TAHVO
RAP3G
TAHVO
RAP3G
RAP3G
System connector
TAHVO
HINKU
VINKU
BT connector/ Main PWB
RAP3G
OMAP
TAHVO
BT
~4V
PURX = 1.8V
RAP3G

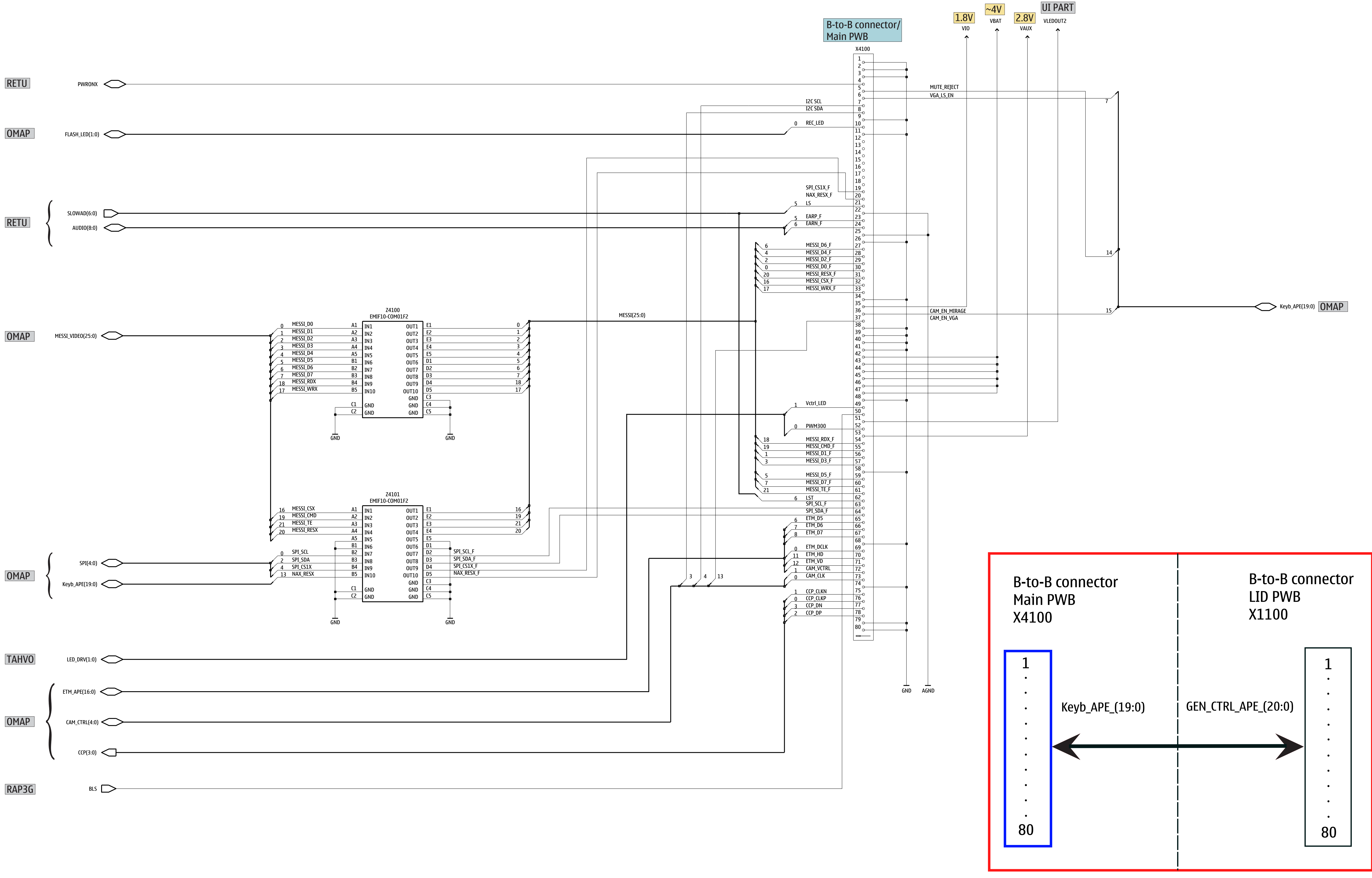

TAHVO
N2300
TAHVO_V5.2_LF
System connector
RETU
OMAP
RAP3G
USB connected
= 5V from host
2.5V only if accessory
is connected
Current gauge
B- to -B conn. /
Main PWB
LED driver (Keyboard)
Keyboard lights
on = ~1.2V
Keyboard
lights on = ~1.2V
DC / DC converter
N4200
LM3661TLX-1.40_NOPB
Traceability pad
1.4V
VCORE
~4V
VBAT
1.8V
VIO
1.4V
VCOREA
SLOWAD(6:0)
CHSWSTAT
CHARGER
LED_DRV(1:0)
USB_ACI(7:0)
PUSL(7:0)
INTUSB(8:0)
EMINT(1:0)
CBUS(3:0)
FLASHM
SETCURR2
VLEDOUT2
CURRENT_SEN
14
19
24


RAP3G
HINKU
RETU
OMAP
TAHVO
3
VINKU
HINKU
RETU
RETU
TAHVO
RETU
VINKU
HINKU
BT connector/
Main PWB
RETU
OMAP
TAHVO
RETU
TAHVO
1.4V
1.4V
1.4V
1.8V
1.8V
OMAP
FM Radio
B-to-B conn. /
Main PWB
OMAP
BT connector/
Main PWB
SDRAM
1.8V
1.8V
10
22
Flash
1.8V

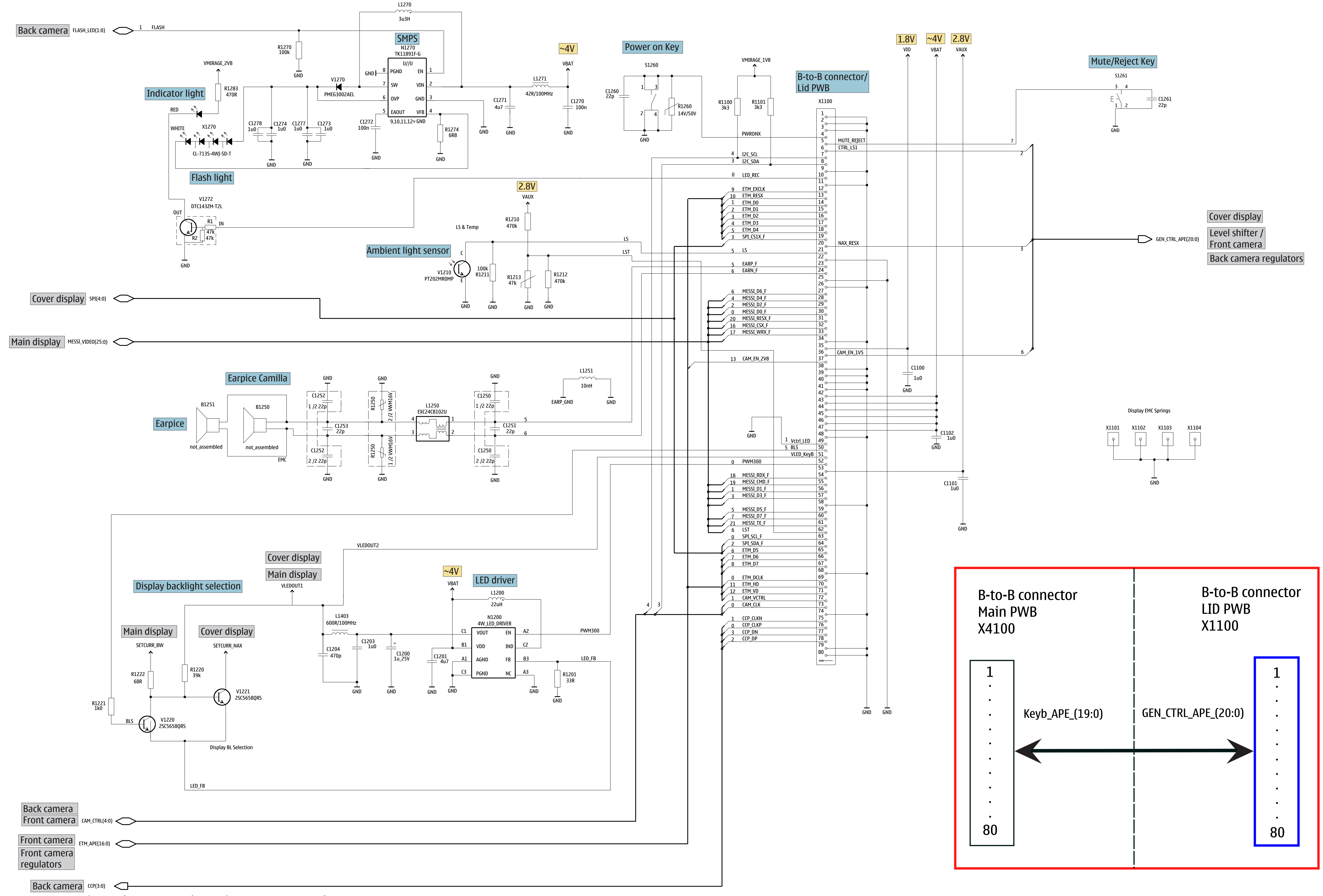

OMAP
Combo memory
INFRARED
HALL SENSOR
BT connector / Main PWB
UI
B-to-B conn. / Main PWB
B-to-B conn. / Main PWB
TAHVO
RAP3G
BT connector / Main PWB
B-to-B conn. / Main PWB
RAP3G
RAP3G
RETU
RAP3G
B-to-B conn. / Main PWB
~4V
1.8V
2.5V
1.8V
1.8V
1.8V
~4V
1.8V
2.8V
1.4V
1.4V
1.8V
1.8V
According to application note
RC Filter for PURX
NMP Reset Mode

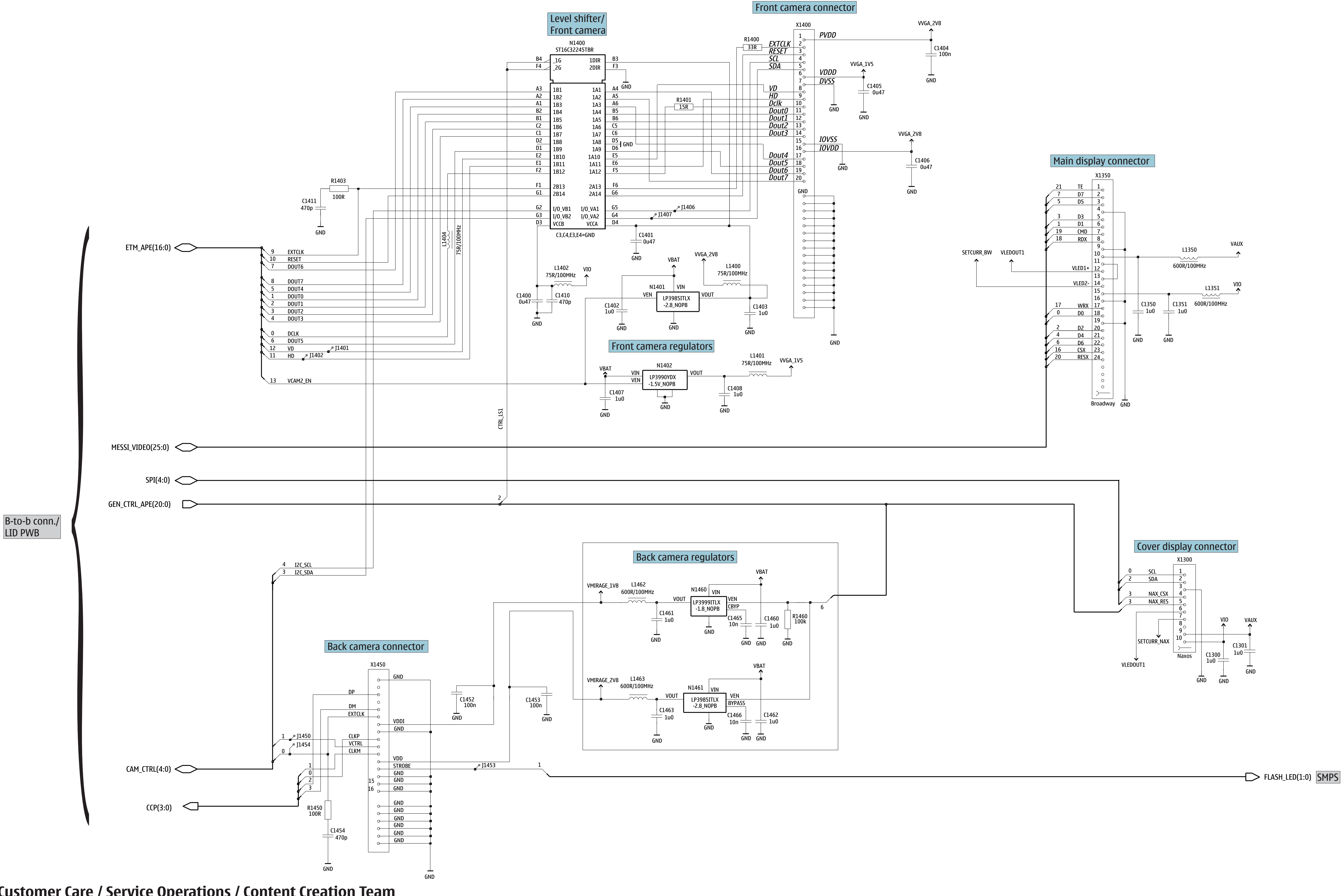

FM Radio
N6156
TEA5761UK_N4B
FmRadio_2V7_ANA
FmRadio_1V8_Dig
R6171
3k3
R6170
3k3
R6150
10k
C6158
100n
R6159
10k
R6160
100k
C6157
10n
C6162
33n
L6156
47nH
DGND
VDD
CPOUT
LOOPSW
DATA
CLOCK
BUSENABLE
BUSMODE
VREFDIG
CBUSenX
SWPORT
FREQIN
XTAL
RFIN1
RFIN2
RFGND
CAGC
INTX
LO1
LO2
VAFR
VAFL
TMUTE
MPXOUT
AGND
CD1
CD2
CD3
INTCON1
INTCON2
VCC
RAP3G
I2C(1:0)
RETU
PUSL(3:0)
SLEEPCLK
System connector
FMANT
C6176
100p
C6178
27p
C6179
47p
L6176
120nH
C6170
10n
C6163
33n
C6159
33n
C6165
33n
C6180
C6182
C6184
C6185
100n
MIC3P
MIC3PR
MIC3N
MIC3NR
XAUDIO(17:0)
G_FMRADIO(11:0)
GND


VOICE KEY
S4400
R4402
14V/50V
GND
S4420
UP
LEFT
RIGHT
DOWN
COLBUS(0:3)
ROWBUS(0:6)
Col3
Col2
Col1
Col0
Right Key
Left Key
RightSK
LeftSK
Row0
Down Key
Up Key
Send
Row1
Row2
Row3
Row4
End
Operator Key
Voice Key
Row5
Apps
Clear
Edit
Row6
Z4400
EMIF02-MIC02F2
Z4401
EMIF02-MIC02F2
Collumn_0
Collumn_1
Collumn_2
Collumn_3
ESD_LEV=1
ESD_LEV=4
Row_0
Row_1
Row_2
Row_3
Row_4
Row_5
Row_6
OMAP
KEYB(19:0)

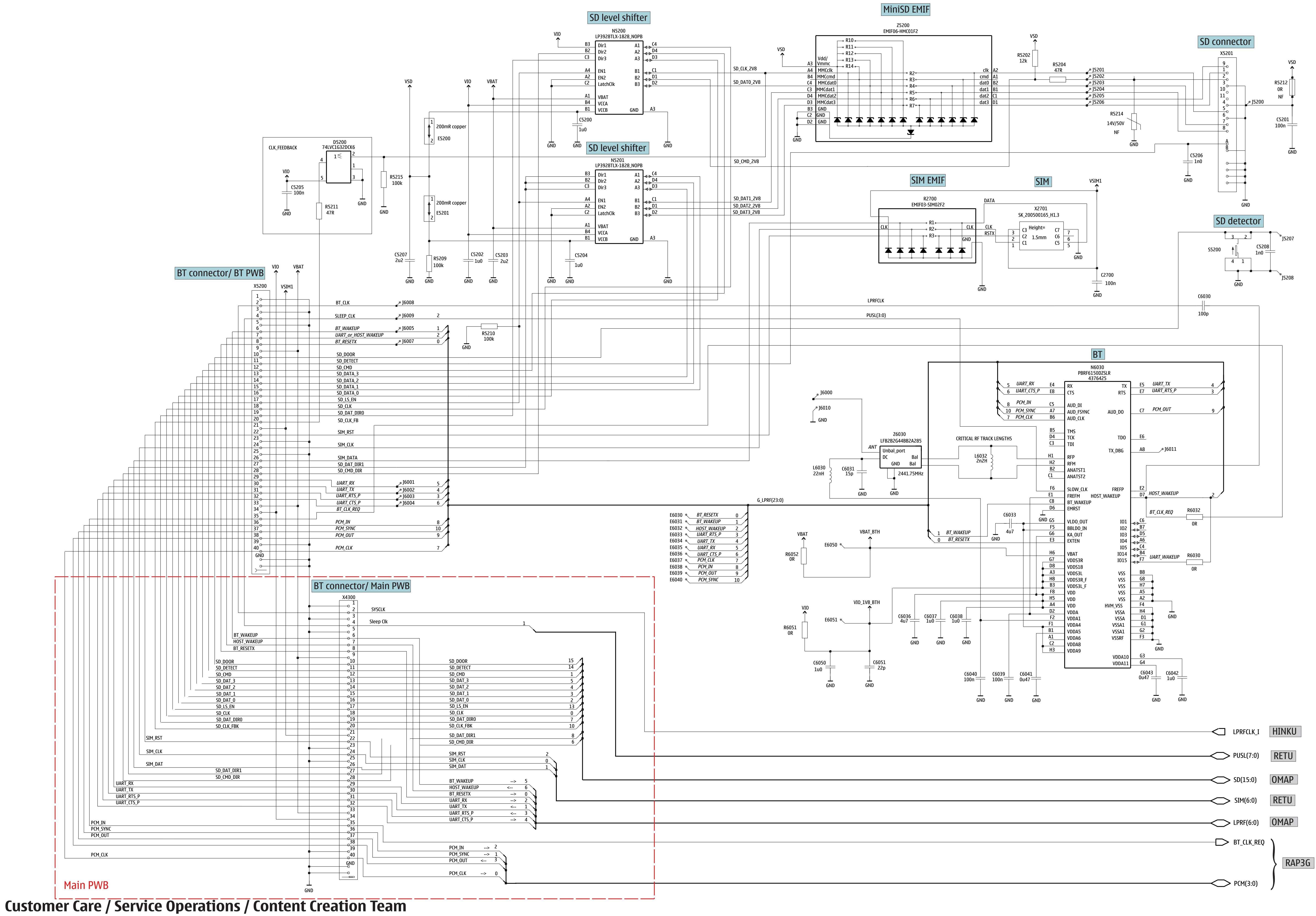


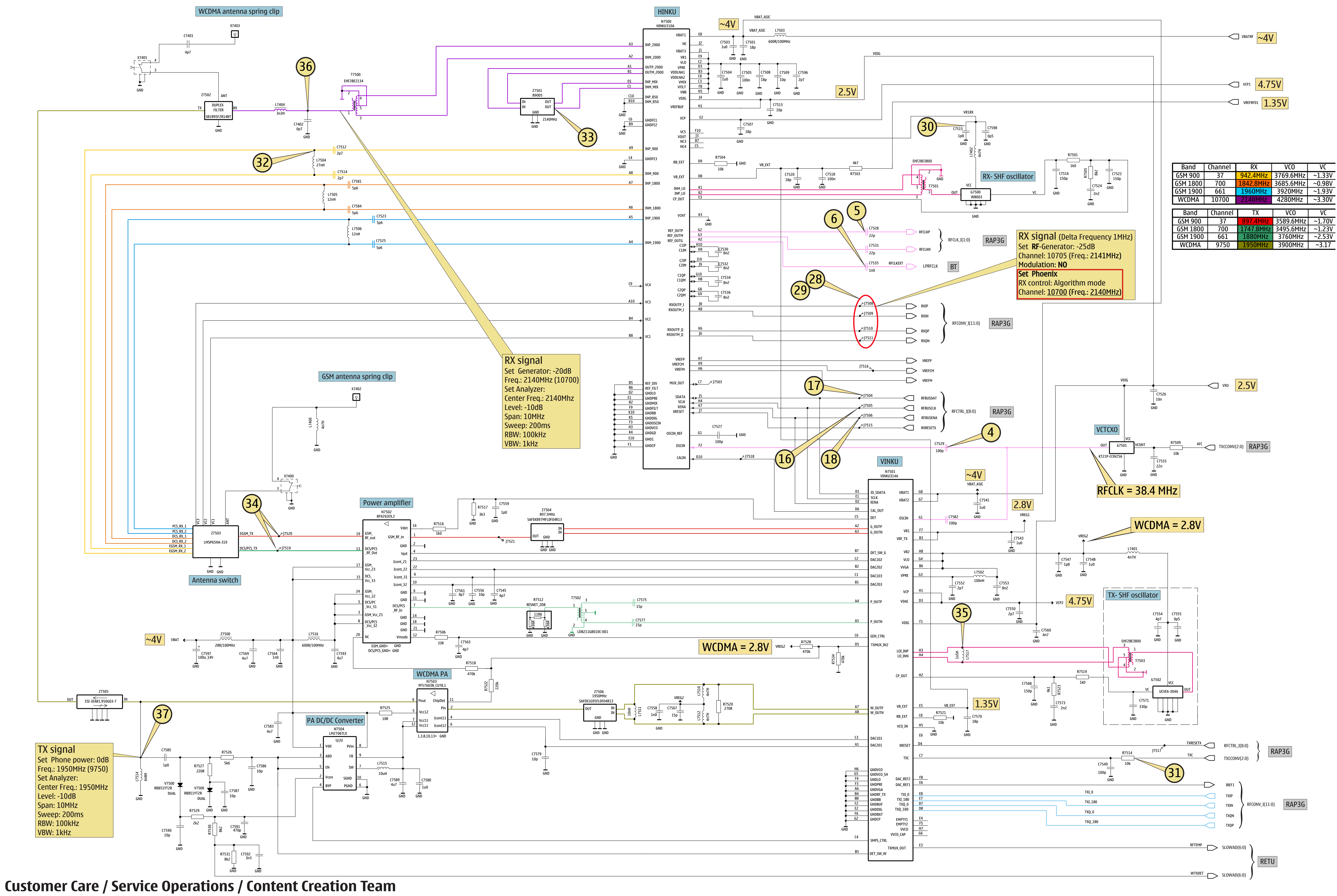
B-to-B connector/
Main PWB
X4100
1.8V
VIO
~4V
VBAT
2.8V
VAUX
UI PART
VLEDOUT2
RETU
PWRONX
OMAP
FLASH_LED(1:0)
RETU
SLOWAD(6:0)
AUDIO(8:0)
OMAP
MESSI_VIDEO(25:0)
Z4100
EMIF10-COM01F2
Z4101
EMIF10-COM01F2
MESSI(25:0)
OMAP
SPI(4:0)
Keyb_APE(19:0)
TAHVO
LED_DRV(1:0)
OMAP
ETM_APE(16:0)
CAM_CTRL(4:0)
CCP(3:0)
RAP3G
BLS
MUTE_REJECT
VGA_LS_EN
CAM_EN_MIRAGE
CAM_EN_VGA
Keyb_APE(19:0)
OMAP
GND
AGND
B-to-B connector
Main PWB
X4100
B-to-B connector
LID PWB
X1100
Keyb_APE_(19:0)
GEN_CTRL_APE_(20:0)
1
80
1
80


Back camera
Indicator light
Flash light
SMPS
Power on Key
B-to-B connector/ Lid PWB
Mute/Reject Key
Ambient light sensor
Cover display
Main display
Earpice Camilla
Earpice
Cover display
Level shifter / Front camera
Back camera regulators
Display backlight selection
LED driver
Back camera
Front camera
Front camera regulators
B-to-B connector Main PWB X4100
B-to-B connector LID PWB X1100
Keyb_APE_(19:0)
GEN_CTRL_APE_(20:0)



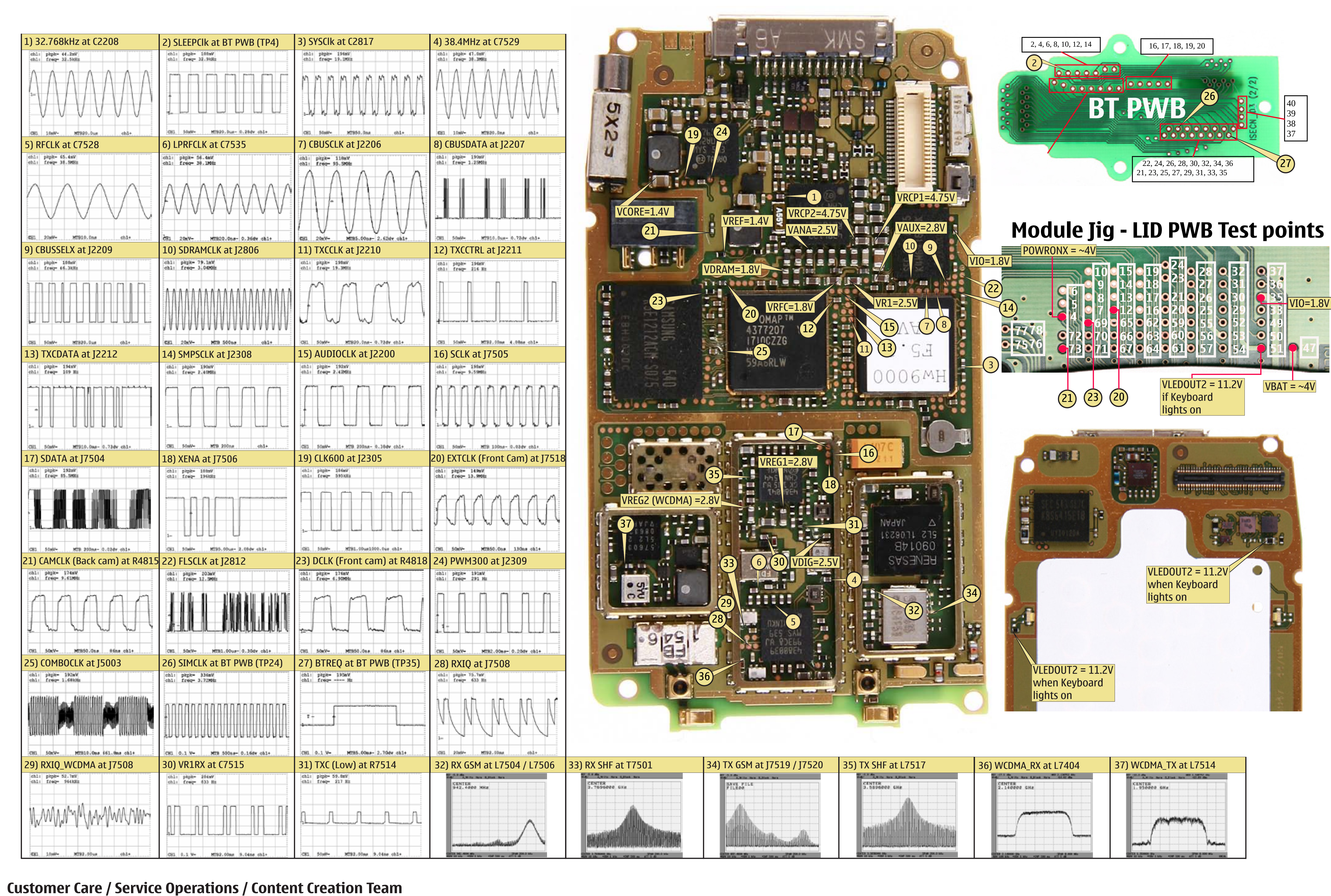
Level shifter/
Front camera
Front camera connector
Main display connector
Front camera regulators
Back camera regulators
Back camera connector
Cover display connector
B-to-b conn./
LID PWB
ETM_APE(16:0)
MESSI_VIDEO(25:0)
SPI(4:0)
GEN_CTRL_APE(20:0)
CAM_CTRL(4:0)
CCP(3:0)
FLASH_LED(1:0)
SMPS
N1400
ST16C32245TBR
X1400
X1350
X1300
X1450
N1401
LP3985ITLX -2.8_NOPB
N1402
LP3990YDX -1.5V_NOPB
N1460
LP3999ITLX -1.8_NOPB
N1461
LP3985ITLX -2.8_NOPB


SD level shifter
MiniSD EMIF
SD connector
SD level shifter
SIM EMIF
SIM
SD detector
BT connector/ BT PWB
BT
BT connector/ Main PWB
Main PWB
HINKU
RETU
OMAP
RETU
OMAP
RAP3G
LPRFCLK_I
PUSL(7:0)
SD(15:0)
SIM(6:0)
LPRF(6:0)
BT_CLK_REQ
PCM(3:0)
CRITICAL RF TRACK LENGTHS

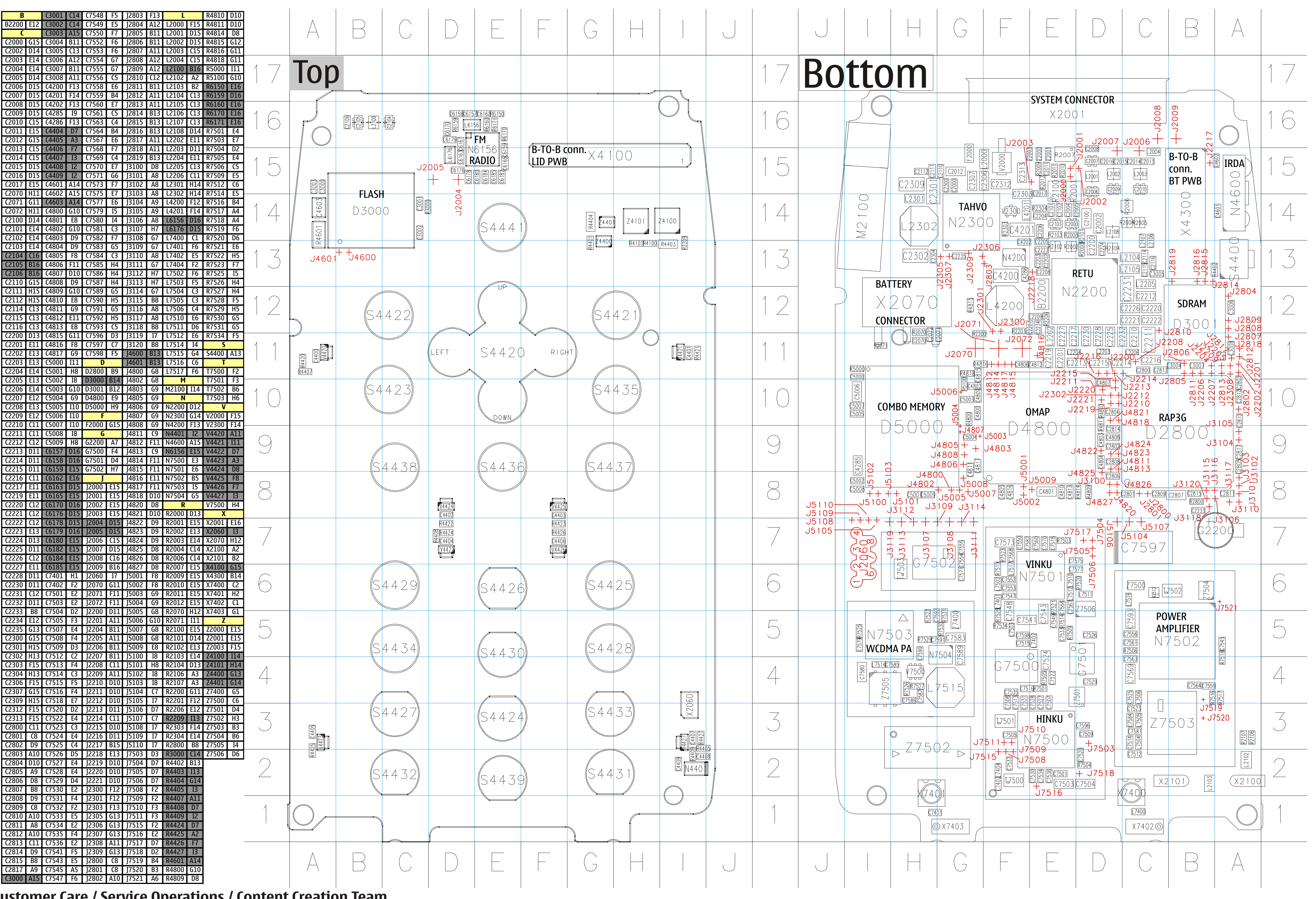


Band	Channel	RX	VCO	VC
GSM 900	37	942.4MHz	3769.6MHz	~1.33V
GSM 1800	700	1842.8MHz	3685.6MHz	~0.98V
GSM 1900	661	1960MHz	3920MHz	~1.93V
WCDMA	10700	2140MHz	4280MHz	~3.30V

Band	Channel	TX	VCO	VC
GSM 900	37	897.4MHz	3589.6MHz	~1.70V
GSM 1800	700	1747.8MHz	3495.6MHz	~1.23V
GSM 1900	661	1880MHz	3760MHz	~2.53V
WCDMA	9750	1950MHz	3900MHz	~3.17



1) 32.768kHz at C2208
2) SLEEPClk at BT PWB (TP4)
3) SYSClk at C2817
4) 38.4MHz at C7529
5) RFCLK at C7528
6) LPRFCLK at C7535
7) CBUSCLK at J2206
8) CBUSDATA at J2207
9) CBUSSELX at J2209
10) SDRAMCLK at J2806
11) TXCCLK at J2210
12) TXCCTRL at J2211
13) TXCDATA at J2212
14) SMPSCLK at J2308
15) AUDIOCLK at J2200
16) SCLK at J7505
17) SDATA at J7504
18) XENA at J7506
19) CLK600 at J2305
20) EXTCLK (Front Cam) at J7518
21) CAMCLK (Back cam) at R4815
22) FLSCLK at J2812
23) DCLK (Front cam) at R4818
24) PWM300 at J2309
25) COMBOCLK at J5003
26) SIMCLK at BT PWB (TP24)
27) BTREQ at BT PWB (TP35)
28) RXIQ at J7508
29) RXIQ_WCDMA at J7508
30) VR1RX at C7515
31) TXC (Low) at R7514
32) RX GSM at L7504 / L7506
33) RX SHF at T7501
34) TX GSM at J7519 / J7520
35) TX SHF at L7517
36) WCDMA_RX at L7404
37) WCDMA_TX at L7514
VCORE=1.4V
VREF=1.4V
VRCP2=4.75V
VANA=2.5V
VRCP1=4.75V
VAUX=2.8V
VIO=1.8V
VDRAM=1.8V
VRFC=1.8V
VR1=2.5V
VREG1=2.8V
VREG2 (WCDMA) =2.8V
VDIG=2.5V
BT PWB
2, 4, 6, 8, 10, 12, 14
16, 17, 18, 19, 20
22, 24, 26, 28, 30, 32, 34, 36
21, 23, 25, 27, 29, 31, 33, 35
Module Jig - LID PWB Test points
POWRONX = ~4V
VIO=1.8V
VLEDOUT2 = 11.2V if Keyboard lights on
VBAT = ~4V
VLEDOUT2 = 11.2V when Keyboard lights on
VLEDOUT2 = 11.2V when Keyboard lights on



B		C3001	C14	C7548	F5	J2803	F13	L		R4810	D10
B2200	E12	C3002	C14	C7549	E5	J2804	A12	L2000	F15	R4811	D10
C		C3003	A15	C7550	F7	J2805	B11	L2001	D15	R4814	D8
C2000	G15	C3004	B11	C7552	F6	J2806	B11	L2002	D15	R4815	G12
C2002	D14	C3005	C13	C7553	F6	J2807	A11	L2003	C15	R4816	G11
C2003	E14	C3006	A12	C7554	G7	J2808	A12	L2004	C15	R4818	G11
C2004	E14	C3007	B11	C7555	G7	J2809	A12	L2100	B16	R5000	I11
C2005	D14	C3008	A11	C7556	C5	J2810	C12	L2102	A2	R5100	G10
C2006	D15	C4200	F13	C7558	E6	J2811	B11	L2103	B2	R6150	E16
C2007	D15	C4201	F14	C7559	B4	J2812	A11	L2104	C13	R6159	D16
C2008	D15	C4202	F13	C7560	E7	J2813	A11	L2105	C13	R6160	E16
C2009	D15	C4285	I9	C7561	C5	J2814	B13	L2106	C13	R6170	E16
C2010	C15	C4286	F13	C7563	C4	J2815	B13	L2107	C13	R6171	E16
C2011	E15	C4404	D7	C7564	B4	J2816	B13	L2108	D14	R7501	E4
C2012	G15	C4405	A3	C7567	E6	J2817	A11	L2202	E11	R7503	E7
C2013	C15	C4406	F7	C7568	F7	J2818	A11	L2203	D11	R7504	D2
C2014	C15	C4407	I3	C7569	C4	J2819	B13	L2204	E11	R7505	E4
C2015	D15	C4408	I2	C7570	E7	J3100	D8	L2205	C13	R7506	C5
C2016	D15	C4409	I2	C7571	G6	J3101	A8	L2206	C11	R7509	E5
C2017	E15	C4601	A14	C7573	F7	J3102	A8	L2301	H14	R7512	C6
C2070	H11	C4602	A15	C7575	E7	J3103	A8	L2302	H14	R7514	E5
C2071	G11	C4603	A14	C7577	E6	J3104	A9	L4200	F12	R7516	B4
C2072	H11	C4800	G10	C7579	I5	J3105	A9	L4201	F14	R7517	A4
C2100	D14	C4801	E8	C7580	I4	J3106	A8	L6156	D16	R7518	A4
C2101	E14	C4802	G10	C7581	C3	J3107	H7	L6176	D15	R7519	F6
C2102	E14	C4803	D9	C7582	F7	J3108	G7	L7400	C1	R7520	D6
C2103	E14	C4804	D9	C7583	G5	J3109	G7	L7401	F6	R7521	E6
C2104	C16	C4805	F8	C7584	C3	J3110	A8	L7402	E5	R7522	H5
C2105	B16	C4806	F11	C7585	H4	J3111	G7	L7404	F2	R7523	F7
C2106	B16	C4807	D10	C7586	H4	J3112	H7	L7502	F6	R7525	I5
C2110	G15	C4808	D9	C7587	H4	J3113	H7	L7503	F5	R7526	H4
C2111	H15	C4809	G10	C7589	G5	J3114	G7	L7504	C3	R7527	H4
C2112	H15	C4810	E8	C7590	H5	J3115	B8	L7505	C3	R7528	F5
C2114	C13	C4811	G9	C7591	G5	J3116	A8	L7506	C4	R7529	H5
C2115	C13	C4812	E11	C7592	H5	J3117	A8	L7510	E6	R7530	G5
C2116	C13	C4813	E8	C7593	C5	J3118	B8	L7511	D6	R7531	G5
C2200	D13	C4815	G11	C7596	D3	J3119	I7	L7512	E6	R7534	F5
C2201	E11	C4816	F8	C7597	C7	J3120	B8	L7514	I4	S	
C2202	E13	C4817	G9	C7598	F5	J4600	B13	L7515	G4	S4400	A13
C2203	E13	C5000	I11	D		J4601	B13	L7516	C6	T	
C2204	E14	C5001	H8	D2800	B9	J4800	G8	L7517	F6	T7500	F2
C2205	E13	C5002	I8	D3000	B14	J4802	G8	M		T7501	F3
C2206	E14	C5003	G10	D3001	B12	J4803	G9	M2100	I14	T7502	B6
C2207	E12	C5004	G9	D4800	E9	J4805	G9	N		T7503	H6
C2208	E13	C5005	I10	D5000	H9	J4806	G9	N2200	D12	V	
C2209	E12	C5006	I10	F		J4807	G9	N2300	G14	V2000	F15
C2210	C11	C5007	I10	F2000	G15	J4808	G9	N4200	F13	V2300	F14
C2211	C11	C5008	I8	G		J4811	C9	N4401	I2	V4420	A11
C2212	C12	C5009	H8	G2200	A7	J4812	F11	N4600	A15	V4421	I11
C2213	D11	C6157	D16	G7500	F4	J4813	C9	N6156	E15	V4422	D7
C2214	D11	C6158	D16	G7501	D4	J4814	F11	N7500	E3	V4423	A3
C2215	D11	C6159	E15	G7502	H7	J4815	F11	N7501	E6	V4424	D8
C2216	C11	C6162	E16	J		J4816	E11	N7502	B5	V4425	F8
C2217	E11	C6163	D15	J2000	E15	J4817	F11	N7503	I5	V4426	F7
C2219	E11	C6165	E15	J2001	E15	J4818	D10	N7504	G5	V4427	I3
C2220	C12	C6170	D16	J2002	E15	J4820	D8	R		V7500	H4
C2221	C12	C6176	D15	J2003	E15	J4821	D10	R2000	D13	X	
C2222	C12	C6178	D15	J2004	D15	J4822	D9	R2001	E15	X2001	E16
C2223	E13	C6179	D16	J2005	D15	J4823	D9	R2002	E13	X2060	I3
C2224	D13	C6180	E15	J2006	C15	J4824	D9	R2003	E14	X2070	H12
C2225	D11	C6182	E15	J2007	D15	J4825	D8	R2004	C14	X2100	A2
C2226	C12	C6184	E15	J2008	C16	J4826	D8	R2006	C14	X2101	B2
C2227	E11	C6185	E15	J2009	B16	J4827	D8	R2007	E15	X4100	G15
C2228	D11	C7401	H1	J2060	I7	J5001	F8	R2009	E15	X4300	B14
C2230	D11	C7402	F2	J2070	G11	J5002	F8	R2010	E15	X7400	C2
C2231	C12	C7501	E2	J2071	F11	J5003	G9	R2011	E15	X7401	H2
C2232	D11	C7503	E2	J2072	F11	J5004	G9	R2012	E15	X7402	C1
C2233	B8	C7504	D2	J2200	D11	J5005	G8	R2070	H12	X7403	G1
C2234	E12	C7505	F3	J2201	A11	J5006	G10	R2071	I11	Z	
C2235	G13	C7507	E4	J2204	B11	J5007	G8	R2100	E15	Z2000	E15
C2300	G15	C7508	F4	J2205	A11	J5008	G8	R2101	D14	Z2001	E15
C2301	H15	C7509	D3	J2206	B11	J5009	E8	R2102	E13	Z2003	F15
C2302	H13	C7512	C2	J2207	B11	J5100	I8	R2103	E14	Z4100	I14
C2303	F15	C7513	F4	J2208	C11	J5101	H8	R2104	D13	Z4101	H14
C2304	H13	C7514	C3	J2209	A11	J5102	I8	R2106	A3	Z4400	G13
C2306	F15	C7515	F5	J2210	D10	J5103	I8	R2107	A3	Z4401	G14
C2307	G15	C7516	F4	J2211	D10	J5104	C7	R2200	G11	Z7400	G5
C2309	H15	C7518	E7	J2212	D10	J5105	I7	R2201	F12	Z7500	C6
C2312	F15	C7520	D2	J2213	D11	J5106	D7	R2206	E12	Z7501	D4
C2313	F15	C7522	E4	J2214	C11	J5107	C7	R2209	I13	Z7502	H3
C2800	C11	C7523	C3	J2215	D10	J5108	I7	R2303	F14	Z7503	B3
C2801	C8	C7524	E4	J2216	D11	J5109	I7	R2304	E14	Z7504	B6
C2802	D9	C7525	C4	J2217	B15	J5110	I7	R2800	B8	Z7505	I4
C2803	A10	C7526	D5	J2218	E13	J7503	D3	R3000	C14	Z7506	D6
C2804	D10	C7527	E4	J2219	D10	J7504	D7	R4402	B13		
C2805	A9	C7528	E4	J2220	D10	J7505	D7	R4403	I13		
C2806	D8	C7529	D4	J2221	D10	J7506	D7	R4404	G14		
C2807	B8	C7530	E2	J2300	F12	J7508	F2	R4405	I3		
C2808	D9	C7531	F4	J2301	F12	J7509	F2	R4407	A11		
C2809	C8	C7532	F2	J2303	F13	J7510	F3	R4408	D7		
C2810	A10	C7533	E5	J2305	G13	J7511	F3	R4409	I2		
C2811	A8	C7534	E2	J2306	G13	J7515	F2	R4424	D7		
C2812	A10	C7535	F4	J2307	G13	J7516	E2	R4425	A2		
C2813	C11	C7536	E2	J2308	A11	J7517	D7	R4426	F7		
C2814	D9	C7541	F5	J2309	G13	J7518	D2	R4427	I3		
C2815	B8	C7543	E5	J2800	C8	J7519	B4	R4601	A14		
C2817	A9	C7545	A5	J2801	C8	J7520	B3	R4800	G10		
C3000	A15	C7547	F6	J2802	A10	J7521	A6	R4809	D8		